VEHICLE BED LINER

This claims benefit under 35 USC 119(e) of provisional patent application No. 60/437,419 filed on Dec. 31, 2002 A.D., the whole specification of which is incorporated herein by reference.

FIELD OF THE INVENTION

The present invention concerns a liner for a bed of a vehicl such as a pickup truck, van, sport utility vehicle, or trailer. Ribs are arrayed in a pattern with the liner.

BACKGROUND TO THE INVENTION

Vehicle bed liners, in general, are well known accessories for the beds of pickup trucks, which are immovably secured in the cargo area of the pickup to protect the bed from dents, chips in the paint, and so forth, and enhance the appeal of the pickup. Constant concerns in the art include the placement and removal of cargo to and from a vehicle cargo area having a bed liner installed, and the strength and durability of the liner.

It would be desirable to improve upon the prior art.

DISCLOSURE OF THE INVENTION

The present invention provides a liner for a bed of a vehicl which comprises a member having a substantially flat portion with ribs that, in one embodiment, in a first part are arranged in an array extending along a front to rear axis, and in a second part have at least one array extending obliquely to the array of the first part. In another embodiment, ribs are arrayed such that in cr ss section a bank of the ribs includes at least on outer rib

m mb r part that spans obliquely from a substantially flat part of the liner into an upper member of a rib that it in part forms.

The invention is useful in vehicle aesthetics and in cargo management. By the invention with its rib patterns, not only can the appeal of a vehicle such as a pickup truck, sport utility vehicle, van, or even a trailer be enhanced, but so can be the placement and removal of cargo to and from a vehicle cargo area; and the strength and/or durability of the liner can be increased. These things can be accomplished economically as well, with there being generally no increase in costs involved in producing the present invention compared to corresponding bed liners of the prior art. Numerous further advantages attend the invention.

The drawings form part of the specification hereof. With respect to the drawings, the following is briefly noted:

FIG. 1 is a top view of a vehicle bed liner, especially adapted for installation in the cargo bed and on the tailgate of a pickup truck as the vehicle.

FIG. 2 is an elevational view of the liner of FIG. 1, looking from the tailgate (rear) end to the cab (front) end.

FIG. 3 is a perspective view of the liner of FIG. 1, looking from the top, left, rear, with the left side not depicted for the sake of clarity.

FIG. 4 is a sectional view of the liner of FIG. 1, taken along 4-4.

The inventi n can be further understood by the f llowing

detail, which may be read in vi w f the drawings. Such is to be taken in an illustrative and not necessarily limiting sense.

In general, the bed liner of the invention includes a member having a substantially flat portion with ribs. Preferably, the flat portion includes a bottom, which may be the bottom of the bed liner for covering the bottom of a cargo area and/or an inside surface of a tailgate. The ribs can be arranged in a first part in an array extending along a front to rear axis, and in a second part have at least one array extending obliquely to the array of the first part. Preferably, the array of the first part is in a central area, taken from one side to an opposing second side of the liner bottom, and as the second part there ar two arrays with the obliquely extending ribs, one on each side of the central area. These two arrays of the second part may form a mirror image of one another with respect to the array in the central area. The ribs can be arrayed such that in cross section a bank of the ribs includes at least one outer rib member part that spans obliquely from a trough part of the liner into a crest member of a rib that it in part forms. Preferably, there are two such obliquely spanning rib member parts, more preferably on opposing outsides of two separate ribs in the bank, and most preferably with at least one intervening rib between the opposing obliquely spanning ribs. Desirably, the intervening rib(s) does(do) have side support member parts connected substantially n rmal to a horizontally ext nding cr st m mber of th rib(s),

each int rv ning rib, f r example, approximating an invert d, substantially squared-off letter "U" (without a tail) in cross-section. The bed liner of the invention may be made to cover the entire cargo area of the vehicle or part(s) thereof.

Any suitable material may be employed in making the vehicle bed liner of the invention. Plastics, especially thermoforming plastics, which can be polyolefins, for instance, polyethylene, polypropylene and/or polybutylene, are advantageously employed.

Any suitable method may be employed to make the vehicle bed liner of the invention. Molding, especially vacuum molding with an enhanced cooling cycle, for example, industrial scale vacuum molding of polypropylene, say, containing carbon black and having any suitable adjuvant(s) such as plasticizer(s), anti-oxidant(s), other anti-static agent(s), reinforcing fiber(s), and so forth, are advantageously employed. A mold-release agent may be used.

The finished vehicle bed liner of the invention can be installed by known methods such as by bolts, clips, glue, rivets, screws and so forth. Thus, when in the form of a bed liner, the invention can immovably secured to the cargo area of the vehicle.

With respect to the drawings, vehicle bed liner 100 includes substantially flat portion 10 having ribs 20. See, FIGS. 1-4.

The substantially flat portion 10 may serve as bottom 11, tailgate inside surface 12, front wall 13, or side wall 14 (not illustrated with ribs). Other features than the ribs 20 such as side wall channel 15, installation recess 16, ledge 17, logo area

18, wh el well boundary 19, and s forth may be present.

The ribs 20 can be arranged in first part 21 in an array extending along a front to rear axis, and in second part 22 have at least one array extending obliquely to the array 21. Other arrangements are possible, for example, with there being locus 23 where no rib extends along the front to rear axis but where two sets of corresponding obliquely extending rib parts 22 meet.

The ribs 20 can be arrayed such that in cross section bank 24 of the ribs 20 includes outer rib 20-o with outer rib member part 25 that spans obliquely from trough part 26 into crest member 27 of the rib 20-o that it in part forms, and intervening rib(s) 20-i can be between a pair of opposing obliquely spanning ribs 20-o. (Such an arrangement may be employed also in a pull out drawer system tray.) The intervening or otherwise any bed lin r rib(s) 20-i, 20 may have side support member parts 28 connected substantially normal to horizontally extending crest member 29.

Sierakowski et al., U.S. patent application No. 29/173,488 filed on Dec. 30, 2002 A.D., is incorporated herein by reference.

The present invention is thus provided. Various features, parts, subcombinations and combinations, or lack whereof, can b employed with or without reference to other features, parts, subcombinations or combinations in the practice of the invention, and numerous adaptations and modifications can be effected in its spirit, the literal claim scope of which is particularly pointed ut as follows: